Scratch Stocks

Use these handmade tools to shape small details on furniture

BY ROB MILLARD

They don't have to be pretty. *These are some of the scratch stocks Millard has made using scraps of wood for the handles and bandsaw blades or old scrapers for the cutting blanks.*

The scratch stock is a simple tool with an impressive ability to dress up furniture with distinctive decorative elements that are exactly the right shape and size. I made my first scratch stock years ago from a piece of oak scrap, and I've made a number of others since then. My shopmade tools aren't as fancy as some commercially available beading tools, but they work, which is all that I require of them.

With scratch stocks, you can shape a wide range of moldings in both straight and curved work. The tool does have some limitations, though. Being slow, a scratch stock is not the right tool for a large run of molding. Also, it's hard to start or stop a scratch stock in the middle of a board (leaving you with some handwork); nor does it work as well across the grain or on softwoods. A scratch stock is best suited for smaller shapes, but with a closely matched handle you can create some fairly wide moldings. Another approach is to use several different cutters, in stages, to obtain a surprisingly complex molding.

Start with a basic scratch stock for beads

The simplest scratch stock I make is an L-shaped piece of oak with a bandsaw kerf cut into it and two screws for clamping the cutter in place. I chamfer the guide edges of the handle to facilitate using it on concave curves with a tight radius. I make the cutters from old cabinet-scraper blades or used bandsaw blades. I first apply layout fluid (the metal dye that some people call bluing) to the cutter blank. I use a machinist's carbide-tipped scriber to draw the profile and then begin filing to those lines using coarse files. Don't allow too much of the cutter to protrude above the vise; otherwise, it will

Photos, except where noted: William Duckworth

BEADS

FLUTES AND REEDS

WIDE MOLDINGS

flex, causing the file to screech and dull quickly. I finish with fine files, being careful to maintain a square cutting edge.

You can put a slight bevel on your cutter to improve the cutting action. But the bevel limits you to using it in only one direction, taking away one great advantage of the scratch stock—its ability to handle reversing grain. I also hone the faces to remove burrs. For this I use a fine, pocket-size diamond stone. I usually end up having more than one profile on a cutter, and I always keep them for future use. When laying out the cutter profile, the more the blade is supported by the handle, the better the cutter will work.

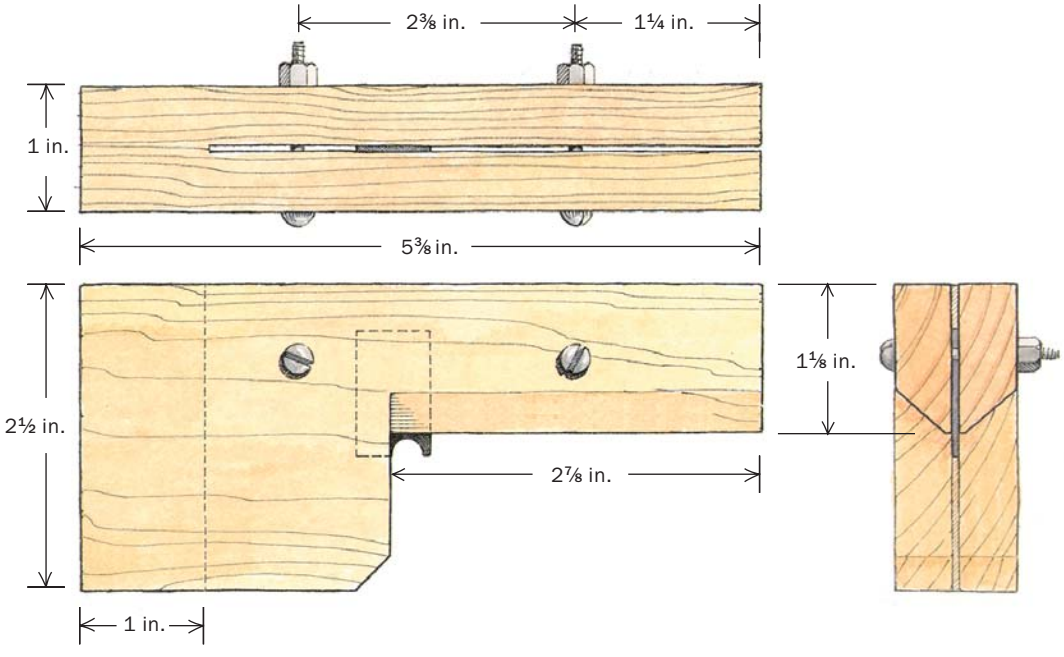
Use scratch stocks for a variety of shapes

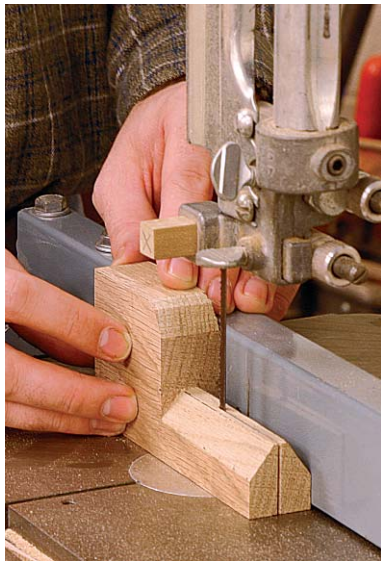
Using a scratch stock couldn't be simpler: Apply light downward pressure as you firmly push the scratch stock forward or draw it toward you. At first, it helps to tilt the tool slightly in the direction of the cut, but you should make the last pass with it as close to vertical as possible to ensure a uniform profile. When possible, the cutter should be installed so that the handle will act as a stop when the full profile has been reached. Once the cutter starts to dull, it will produce dust as opposed to fine shavings. At that point you'll have to file the edge lightly and hone the face again. If I'm making more than one length of molding, I typically go over each piece one last time with a freshly sharpened cutter. Following that procedure keeps the profiles consistent.

Because I make period furniture, I often have to reproduce moldings that don't correspond to profiles available in shaper or router bits, or that I don't have an appropriate molding plane for. I remove the bulk of the waste from a given profile using a router,

A BASIC SCRATCH STOCK FOR BEADING

An L-shaped body works well to make simple beads. The cutter is placed right into the corner, where the two wood edges stabilize the blade for a clean, consistent cut. The long edge is chamfered, so the cutter can be tilted to start the shaping.





Narrow bandsaw kerf is just right. *Split the body of the scratch stock down the middle but stop the cut 1 in. shy of the end. The cutters are pinched in the kerf and held in place with two machine screws and nuts.*

Photo, this page (bottom): Michael Pekovich; drawings: Heather Lambert

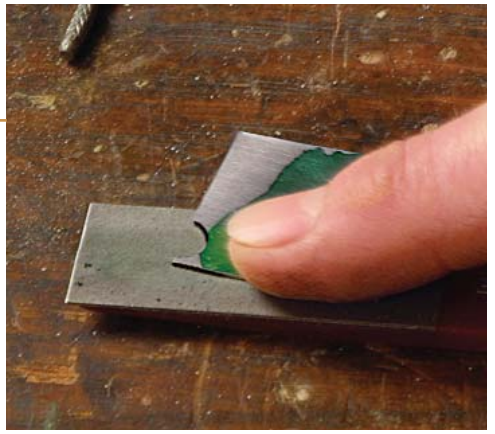
MAKING A SCRATCH-STOCK CUTTER

You can make cutters using scrap metal from card scrapers and old bandsaw or hacksaw blades.

1 ***Add some color to the steel cutting blank.*** *Layout fluid (also called bluing) makes it easier to see scratch marks that define the shape of the cutting edge.*

2 ***Drafting templates come in handy.*** *Scribe shapes on the cutting blanks using a machinist's scriber.*

3 ***Start with coarse files.*** *Remove metal waste quickly with a coarse file, then improve the cutting edge with a finer tool.*



4 ***Hone the blank to remove any burrs.*** *A pocket-size diamond stone is ideal for sharpening small cutting blanks.*

then refine the profile with a scratch stock. For me, this has the added benefit of giving a handmade look to the molding.

With extremely careful use, the scratch stock can produce moldings that rival those made by machine, and in some cases surpass them, because a steel scratch-stock cutter can be filed to a much finer point than carbide tools. Also, the variety of shapes that you can make is virtually limitless.

Applied cock beads—For making applied cock beads, I use two different methods. One is to work the bead on a piece of wide stock and rip it off, and the other is to clamp the scratch stock in a vise and pull a piece of material already cut to thickness over the cutter. This second method is also the one I use for cock beads that are applied to curved work. Here again, you must be careful of the cutting direction to avoid tearout.

Reeds—My favorite use for the scratch stock is to cut reeds in turned Sheraton legs (see the photos on the facing page). This makes quick work of reeded legs, as long as the profile of the leg is a gentle taper. (A more bulbous turning requires carving the reeds by hand with a chisel because of the dramatic change in its radius.) I made a wood fixture from plywood and lumber scraps that I clamp to the bed of my lathe. The fixture acts as a guide for a scratch stock to keep it running down the centerline of the leg and more or less parallel to the taper of the leg. By using the indexing feature of the lathe, I can quickly shape the required number of 12 reeds. The ends of each reed still need to be carved by hand, and the profiles refined with chisels and a scraper.

Flutes and coves—Fluted columns can be made with the same setup, but the process requires more care because more of the cutter protrudes from the handle, as it also does on large coves, which causes the tool to chatter. If the flutes don't run all the way through the tops and bottoms of columns, you are left with a considerable amount of hand-carving to do. But for period furniture the result is still visually superior to router-cut flutes and coves. With a scratch stock, you're limited to fairly small cuts (¼ in. or 5⁄16 in.) because of the

TWO OPTIONS FOR APPLIED BEADS

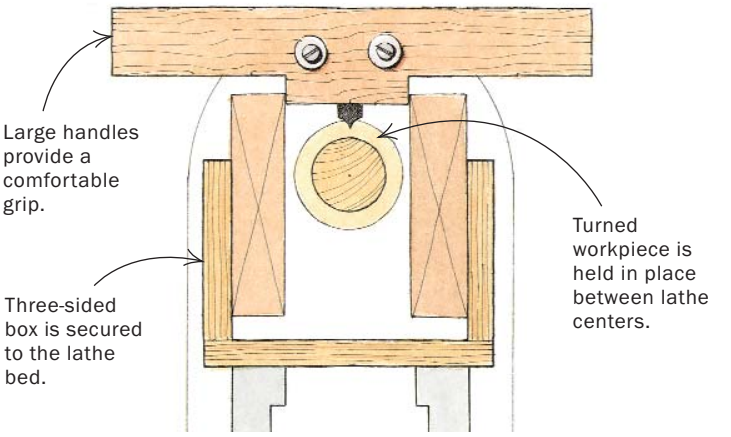
Move the scratch stock against the workpiece. *Make the cut in multiple passes, with light downward pressure as you go. On the final few passes, hold the blade as vertically as possible. Rip the bead from the stock.*

Move the workpiece against the cutter. *With the scratch stock clamped in a vise, make multiple passes. This method works well for delicate workpieces, such as cock beads that will be applied to curved surfaces.*

Photos, this page (top and bottom right): Michael Pekovich

SCRATCH STOCK FOR REEDS AND FLUTES

Millard reeds a leg by mounting an open-ended, three-sided box on the lathe bed. The handle of his scratch-stock beading tool fits within the box and rides along the top edge of the open end. This setup allows him to control the cut better and make reeds that run straight along their length.



Some additional handwork is often necessary. *Transitional areas, such as where these reeds start and stop at the top and bottom of the legs, often require additional shaping with chisels and scrapers.*

flexing of the cutter, unless you construct a shaped handle that provides more support.

Curved work—For use on curved work, I install the cutter in the scratch stock so that I use the short side of the handle as the driver, to lessen the tendency to rotate the tool too much when turning around a curve. With curved work, the grain changes directions continuously, so you'll have to pay close attention to the direction in which you push the cutter so that you get the best finished surface. And even then, at the areas where the direction changes, you will probably need to refine the shape of the scratch cut with carving tools.

Complex moldings—With a properly made handle, you can work a molding up to at least 1½ in. wide, after removing much of the waste with a series of rabbets using a router, a shaper or a dado set on the tablesaw. The handle should at least roughly follow the shape of the molding profile, leaving about ⅛ in. to 3⁄16 in. of the cutter exposed. You also can make the profile in stages—much as you would work a complex molding with a series of router bits. The limitation here is that you must have two edges that you can use to guide the scratch stock accurately. □

Rob Millard builds one-of-a-kind reproduction furniture in his garage shop in Dayton, Ohio.

WIDE MOLDINGS

Scratch stocks work best when removing only small amounts of wood. For larger or more complex moldings (such as the cove shown here), Millard often uses molding planes or small routers first, following with an appropriately shaped scratch-stock cutter to scrape the surface clean.